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EXAMINER

WHIPKEY, JASON T

ART UNIT

PAPER NUMBER

2612

DATE MAILED: 01/26/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/982,372

Applicant(s)

DUTTA, AMIT

Examiner

Jason T. Whipkey

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– The MAILING DATE of this communication appears on the cover sheet with the correspondence address –  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1 and 3-29 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 and 3-29 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 09 December 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments with respect to claims 1 and 3-29 have been considered but are moot in view of the new grounds of rejection.

### *Claim Rejections - 35 USC § 102*

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

3. Claims 10 and 21 are rejected under 35 U.S.C. 102(e) as being anticipated by Onuki (U.S. Patent Application Publication No. 2002/0097324).

Regarding **claim 10**, Onuki discloses a handheld device (see Figure 1) for taking an image of an object comprising:

a camera module capable of focusing on (via microcomputer CCPU; see paragraph 110) and generating (using image sensing device IMS; see paragraph 113) an electronic image signal corresponding to an image of the object;

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a motion sensor (vibration sensors GRP and GRY) for sensing movement of said camera module and for generating a movement signal indicative of the movement of said camera module (see paragraph 127),

a transmitting means for transmitting the electronic image signal and the movement signal to a processing engine (note the connections to microcomputer CCPU in Figure 1); and

a processing engine (microcomputer CCPU) capable of combining a plurality of corrected image signals corresponding to a plurality of substantially identical images taken of the object (see paragraph 331) to result in a signal that produces an image of the object having a higher quality than any of the single images (see paragraphs 331-337 and 340).

Regarding **claim 21**, Onuki discloses a method of obtaining an image of an object with a handheld device containing a camera module and a motion sensor (see Figure 1), said method comprising:

taking a plurality of images of the object with the camera module to generate an electronic image signal corresponding to each of the plurality of images taken (using image sensing device IMS; see paragraphs 331-337);

storing the plurality of electronic image signals (in memory MEM; see paragraph 114);

sensing movement of the camera module between the taking with the camera module of the plurality of images of the object (using vibration sensors GRP and GRY; see paragraphs 127 and 313);

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generating a plurality of movement signals which are indicative of sensed movement of the camera module (see *id.*);

processing each of the plurality of electronic image signals (using microcomputer CCPU) in response to the movement signals to correct for movement of the camera module to generate a plurality of corrected electronic image signals (see paragraph 132); and

combining a plurality of corrected image signals corresponding to a plurality of substantially identical images taken of the object (see paragraph 331) to result in a signal that produces an image of the object having a higher quality than any of the single images (see paragraphs 331-337 and 340).

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claims 1, 3-5, 7-9, 14-17, 20, and 22 rejected under 35 U.S.C. 103(a) as being unpatentable over Chen (U.S. Patent Application Publication No. 2001/0010546) in view of Sano (U.S. Patent Application Publication No. 2001/0008419).

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Regarding **claim 1**, Chen discloses a handheld device (VR camera 12 in Figure 1; see paragraph 34) for taking an image of an object, comprising:

a camera module (comprised of optic 15 and image acquisition unit 17) capable of focusing on and generating an electronic image signal corresponding to an image of the object (see paragraph 21);

a motion sensor (orientation/position sensor 21) for sensing movement of said camera module and for generating a movement signal indicative of the movement of said camera module (see paragraphs 25-26); and

a transmitting means (the connections from image acquisition unit 17 and orientation/position sensor 21 to processor 19; see Figure 1) for transmitting the electronic image signal and the movement signal to a processing engine (processor 19); and

a processing engine (processor 19) receiving the electronic image signal and the movement signal from the transmitting means (see Figure 1), and for processing the electronic image signal in response to the movement signal to correct the image signal for movement of said camera module (angular errors such as the ones in the discrete images 35 shown in Figure 2 are compensated for; see paragraph 34), for combining a plurality of corrected image signals into an electronic image output signal corresponding to a single image of the object (resulting in panoramic image 41; see paragraph 35).

Chen is silent with regard to correcting the brightness of an image by comparing it to a brightness standard.

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Sano discloses:

processing the electronic image signal to correct the brightness of an image produced by the electronic image signal by comparing the brightness of the produced image to a predefined or stored desired brightness standard (see paragraph 17).

An advantage of comparing an image's brightness to a predefined standard is that brightness can remain consistent when shots are captured at different locations. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's system compare the image's brightness to a predefined standard, as described by Sano.

Regarding **claims 3, 4, and 7**, Chen teaches in paragraph 25 that orientation/position sensor 21 detects a change in position relative to an arbitrary starting point by measuring position in three dimensions.

Regarding **claim 5**, Chen teaches in paragraph 25 that accelerometers are used to detect movement.

Regarding **claim 8**, Chen teaches in paragraph 35 that memory 25 stores a plurality of electronic image signals corresponding to the plurality of images of the object.

Regarding **claim 9**, Chen teaches in paragraphs 38-39 that the processing engine is capable of combining a plurality of corrected image signals (composite image 59 in Figure 3) corresponding to a plurality of images taken of different portions of the object.

Regarding **claim 14**, Chen discloses a method for obtaining an image of an object with a handheld device (VR camera 12 in Figure 1; see paragraph 34) containing a camera module

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(comprised of optic 15 and image acquisition unit 17) and a motion sensor (orientation/position sensor 21), said method comprising:

taking a plurality of images (see paragraph 30) of the object with the camera module to generate an electronic image signal corresponding to each of the plurality of images taken (see paragraph 21);

storing the plurality of electronic image signals (in memory 25; see paragraph 35);

sensing movement of the camera module (using orientation/position sensor 21) between the taking with the camera module of the plurality of images of the object (see paragraphs 25-26);

generating a plurality of movement signals which are indicative of sensed movement of the camera module (see *id.*);

processing (via processor 19) each of the plurality of electronic image signals in response to the movement signals to correct for movement of the camera module to generate a plurality of corrected electronic image signals (see paragraph 34);

combining the plurality of corrected electronic image signals into an electronic output signal corresponding to a single image of the object (see paragraph 35).

Chen is silent with regard to correcting the brightness of images by comparing them to a brightness standard.

Sano discloses:



processing each of the plurality of electronic image signals to correct the brightness of the images produced by the electronic image signals by comparing the brightness of the produced images to a predefined or stored desired brightness standard (see paragraph 17).

An advantage of comparing image brightness to a predefined standard is that brightness can remain consistent when shots are captured at different locations. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's system compare image brightness to a predefined standard, as described by Sano.

Regarding **claims 15 and 16**, Chen teaches in paragraph 25 that orientation/position sensor 21 detects a change in position relative to an arbitrary starting point by measuring position in three dimensions.

Regarding **claim 17**, as described in the rejection of claim 14, Chen's camera performs the storing, processing, and combining internally.

Regarding **claim 20**, Chen teaches in paragraphs 38-39 that the camera combines a plurality of corrected image signals (composite image 59 in Figure 3) corresponding to a plurality of images taken of different portions of the object.

Regarding **claim 22**, Chen discloses displaying on a display (unlabeled) of the handheld device an image in response to the electronic image output signal (see paragraph 40).

6. Claims 11-13, 18, 19, and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Sano and further in view of Thomas (U.S. Patent No. 6,781,623).

**Claims 11 and 18** may be treated like claims 1 and 17, respectively. However, Chen is silent with regard to the handheld device being a mobile phone.

Thomas discloses a wireless video phone that accounts for camera movement during image capture (see column 1, lines 11-49). An advantage of including a camera in a video phone is that images may be easily transmitted to a remote viewer using a piece of equipment commonly carried. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's camera incorporated into a mobile phone.

**Claim 12** may be treated like claim 1. While Chen discloses combining a plurality of corrected image signals into an electronic image output signal corresponding to a single image of the object (see paragraphs 38-39), he is silent with regard to performing the processing in a remotely located processing engine.

Thomas discloses a camera, including:

a processing engine (base station 50; see Figure 9) located remotely from the handheld device (see column 7, line 55), said processing engine receiving the electronic image signal (see column 7, lines 40-43) and the movement signal (see column 7, lines 43-48, and column 4, lines 43-45) from the transmitting means and for processing the electronic image signal in response to the movement signal to correct the image signal for movement of said camera module (see column 7, lines 48-53).

As stated in column 7, lines 53-60, an advantage of performing processing remotely from the handheld device is that sophisticated image processing techniques can be created on a larger computer instead of adding processing power to every camera/phone. For this reason, it would

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have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's camera perform processing remotely, as described by Thomas.

Regarding **claim 13**, Chen is silent with regard to the handheld device being a mobile phone.

Thomas discloses a wireless video phone that accounts for camera movement during image capture (see column 1, lines 11-49). An advantage of including a camera in a video phone is that images may be easily transmitted to a remote viewer using a piece of equipment commonly carried. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's camera incorporated into a mobile phone.

**Claim 19** may be treated like claim 14. While Chen discloses combining a plurality of corrected image signals into a single image (see paragraphs 38-39), he is silent with regard to performing the processing in a remotely located processor.

Thomas discloses a camera, wherein storing the plurality of electronic image signals (storage inherently occurs when processing multiple frames together) and processing each of the plurality of electronic image signals is performed by a processor remote from the handheld device (see column 7, line 55).

As stated in column 7, lines 53-60, an advantage of performing processing remotely from the handheld device is that sophisticated image processing techniques can be created on a larger computer instead of adding processing power to every camera/phone. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's camera perform processing remotely, as described by Thomas.

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**Claim 23** may be treated like claim 14. However, Chen is silent with regard to transmitting the image output signal to a remote display.

Thomas discloses a wireless video phone that accounts for camera movement during image capture. Images are captured and transmitted to a remote display (see column 1, lines 11-49). An advantage of having a camera transmit images to a remote display is that information about a subject may be shared with a remote viewer. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's camera transmit images to another device.

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chen in view of Sano and further in view of Perlmutter (U.S. Patent Application Publication No. 2002/0123386).

**Claim 6** may be treated like claim 4. While Chen does teach that the position of the camera in a three-dimensional space is detected "by including in the O/P sensor 21 accelerometers *or other devices*" (emphasis added), Chen is silent with regard to specifically including a gyroscope.

Perlmutter discloses a handheld device including an internal motion sensor. In paragraph 53, Perlmutter teaches that an advantage of including a gyroscope is that the change in direction and angle of the device can be measured, as opposed to just the change of speed measured by an accelerometer. Therefore, including both would provide more accurate information. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Chen's camera include a gyroscope, as described by Perlmutter.

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8. Claims 24, 25, 27, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Onuki in view of Takahashi (U.S. Patent No. 5,929,908).

**Claim 24** may be treated like claim 21. However, Onuki is silent with regard to taking a plurality of images when the brightness is below a brightness threshold.

Takahashi discloses an imaging system, wherein:

a step of taking a plurality of images comprises repeatedly taking a predetermined number (two; see column 5, lines 39-45) of substantially identical images when the brightness is below a brightness threshold (when condition 3 is met, thresholds TA and TB has indicated that the image is too dark; see column 5, line 17, through column 6, line 11).

As stated in column 7, lines 14-35, an advantage of capturing additional images when image brightness does not reach a specified threshold is that the effective dynamic range of the imaging device can be increased. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Onuki's system capture additional images when an image brightness does not meet a specified threshold.

Regarding **claims 25 and 28**, Onuki discloses:

the predetermined number of images is a sufficient number of images to produce a reconstructed image above the brightness threshold (see column 5, line 52, through column 6, line 3).

Regarding **claim 27**, Onuki discloses:

said camera module includes a processing engine programmed such that a predetermined number of substantially identical images are taken when the

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brightness is below a brightness threshold (see column 5, line 52, through column 6, line 3).

9. Claim 26 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onuki in view of Takahashi and further in view of Thomas.

**Claim 26** may be treated like claim 24. However, Onuki is silent with regard to the handheld device being a mobile phone.

Thomas discloses a wireless video phone that accounts for camera movement during image capture (see column 1, lines 11-49). An advantage of including a camera in a video phone is that images may be easily transmitted to a remote viewer using a piece of equipment commonly carried. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Onuki's camera incorporated into a mobile phone.

10. Claim 29 is rejected under 35 U.S.C. 103(a) as being unpatentable over Onuki in view of Thomas.

**Claim 29** may be treated like claim 10. However, Onuki is silent with regard to the handheld device being a mobile phone.

Thomas discloses a wireless video phone that accounts for camera movement during image capture (see column 1, lines 11-49). An advantage of including a camera in a video phone is that images may be easily transmitted to a remote viewer using a piece of equipment commonly carried. For this reason, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have Onuki's camera incorporated into a mobile phone.

*Conclusion*

11. Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason Whipkey, whose telephone number is (571) 272-7321. The examiner can normally be reached Monday through Friday from 9:00 A.M. to 5:30 P.M. eastern daylight time.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ngoc-Yen Vu, can be reached at (571) 272-7320. The fax phone number for the organization where this application is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JTW

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January 19, 2006



NGOC-YEN VU  
PRIMARY EXAMINER